

LISTING OF THE CLAIMS

1. (Previously Presented): A liquid crystal display (LCD) device having a gamma voltage correcting apparatus, wherein the LCD device has a display panel that includes a plurality of pixels defined by gate lines and data lines, said LCD device comprising:

a display controller for receiving video data and vertical and horizontal synchronizing signals and outputting the video data and a clock;

the gamma voltage correction apparatus including;

a memory means for storing at least two sets of digital gamma data for at least two input modes,

a gamma control means for accessing one set of the digital gamma data in response to a selection signal,

a multi-channel gamma voltage generator having a plurality of digital to analog converters (DACs), the digital to analog converters generating n gamma voltages (wherein n is an integer) having a different voltage level in response to the digital gamma data respectively, and

a column driver connected to the display panel, wherein the column driver receives the video data and the clock from the display controller and the n gamma voltages from the gamma voltage correction apparatus, and then corrects the video data using the n gamma voltages and applies the corrected video data to the data lines.

2. (Previously Presented): The gamma voltage correcting apparatus according to claim 1, wherein the selection signal is provided to the gamma voltage correction apparatus by a user.

3. (Previously Presented): The gamma voltage correcting apparatus according to claim 1, further comprising a buffer unit for buffering a signal having the gamma voltage from the multi-channel gamma voltage generator to apply it to the column driver.

4. (Original): The gamma voltage correcting apparatus according to claim 1, further comprising a voltage-dividing resistor for dividing the n gamma voltages into m gamma voltages (wherein m is an integer larger than n) having a different voltage level.

5. (Previously Presented): The gamma voltage correcting apparatus according to claim 1, where in the multi-channel gamma voltage generator includes:

a data receiver for receiving the gamma data and a clock signal in the mode selected by the control means; and

a reference voltage generator for dividing an externally supplied supply voltage to generate a plurality of reference voltages having a different voltage level;

wherein the digital to analog converters select the reference voltages in response to the digital gamma data to generate the gamma voltages, respectively.

6. (Original): The gamma voltage correcting apparatus according to claim 1, wherein the memory means and the control means are integrated into a single integrated circuit.

7. (Original): The gamma voltage correcting apparatus according to claim 2, further comprising:

a row driver for sequentially applying a scanning pulse to the gate lines to drive the gate lines; and

a timing controller for supplying red, green and blue digital video data to the column driver and for applying a desired timing control signal to the row driver.

8. (Original): The gamma voltage correcting apparatus according to claim 7, wherein the memory means, the control means and the timing controller are integrated into a single integrated circuit.

9-12. (Cancelled)

13. (Previously Presented): A method of correcting a gamma voltage in a liquid crystal display wherein a liquid crystal pixel is arranged at each intersection between data lines and gate lines and video data is corrected by a preset gamma voltage to display an image, said method comprising:

receiving video data and vertical and horizontal synchronizing signals and outputting the video data and a clock;

storing at least two sets of digital gamma data for at least two input modes;

accessing the digital gamma data in response to an instruction from a user;
selecting one set of the digital gamma data for each mode;
responding to the one set of the gamma data for the selected mode to generate n gamma voltages (wherein n is an integer) having a different voltage level using a plurality of digital to analog converters (DACs), the digital to analog converters responding to the digital gamma data respectively;
correcting the video data using the n gamma voltages; and
applying the corrected video data to the data lines.

14. (Original): The method according to claim 13, wherein the gamma data is set differently in accordance with each mode set in correspondence with peripheral equipment interchangeable with the liquid crystal display.

15. (Previously Presented): The method according to claim 13, wherein the digital gamma data is set differently in accordance with each mode set in correspondence with an optical recording medium player, a television image signal display device, and a camcoder.

16. (Original): The method according to claim 13, further comprising the steps of:
dividing the n gamma voltages into m gamma voltages (wherein m is an integer larger than n) having a different voltage level; and
correcting the video data using the m gamma voltages and supplying the corrected video data to the data lines.

17. (Original): The method according to claim 16, further comprising:
buffering the m gamma voltages and applying the buffered m gamma voltages to the column driver.

18-20. (Cancelled)

21. (Previously Presented): A device for providing a desired gamma voltage for a liquid crystal display (LCD), said device comprising:

a memory for storing a plurality of digital gamma data corresponding to a plurality of modes;

a controller for receiving an external mode signal and in response thereto selecting selected digital gamma data from the memory;

a reference voltage generator for receiving a supply voltage and generating a plurality of reference voltages;

a plurality of digital-to-converters (DACs) selecting the reference voltages in response to the digital gamma data to generate n gamma voltages (wherein n is an integer) having a different voltage level, respectively;

wherein each of the plurality of modes corresponds to a different source video generator for providing video data to the LCD.

22-24 (Cancelled)

25. (Original): The device of claim 21, wherein the gamma voltage generator comprises a resistor divider network.

26-28. (Cancelled)

29. (Previously Presented): A method of providing a desired gamma voltage for a liquid crystal display having a plurality of pixels defined by gate lines and data lines, comprising:

receiving video data and vertical and horizontal synchronizing signals and outputting the video data and a clock;

storing a plurality sets of digital gamma data corresponding to a plurality of modes in a memory device;

receiving an external mode signal and in response thereto selecting selected digital gamma data from the memory;

generating a plurality of gamma reference voltages according to the selected gamma data;

generating a plurality of gamma voltages from the plurality of gamma reference voltages using a plurality of digital-to-converters (DACs), the DACs selecting the reference voltages in response to the digital gamma data to generate the gamma voltages having a different voltage level, respectively;

correcting the video data using the gamma voltages; and
applying the corrected video data to the data lines.

30. (Original): The method of claim 29, wherein generating the plurality of gamma reference voltages comprises:

receiving a supply voltage and generating therefrom a plurality of reference voltages; and
generating the plurality of gamma reference voltages from the gamma data and the plurality of reference voltages.

31. (Cancelled).

32. (Previously Presented): The method of claim 30, wherein generating the a plurality of gamma voltages comprises dividing the plurality of gamma reference voltages in a divider network.

33. (Cancelled).

34. (Previously Presented): A display device having a gamma voltage correcting part, wherein the display device has a display panel that includes a plurality of pixels defined by gate lines and data lines, the display device comprising:

a display controller for receiving video data and vertical and horizontal synchronizing signals and outputting the video data and a clock;

the gamma voltage correction part including;

a memory for storing at least two sets of digital gamma data for at least two input modes,

a gamma controller for accessing one set of the digital gamma data in response to a selection signal,

a plurality of digital-to-converters (DACs) generating n gamma voltages (wherein n is an integer) having a different voltage level in response to the digital gamma data, respectively, and

a column driver connected to the display panel, wherein the column driver receives the video data and clock from the display controller and the n gamma voltages from the gamma

voltage correction part, and then corrects the video data using the n gamma voltages and applies the corrected video data to the data lines.

35. (Previously Presented): The display device according to claim 34, wherein the selection signal is provided to the gamma voltage correction apparatus by a user.

36. (Previously Presented): A display device having a gamma voltage correcting part, wherein the display device has a display panel that includes a plurality of pixels defined by gate lines and data lines, the display device comprising:

- a display controller for receiving a first video data and vertical and horizontal synchronizing signals and outputting a second video data and a clock;

- a lookup table driver connected to the display controller for adjusting color temperature of the second video data and outputting a third video data;

- the gamma voltage correction part including;

- a memory for storing at least two sets of gamma data for at least two input modes,

- a gamma controller for accessing one set of the gamma data in response to a selection signal,

- a multi-channel gamma voltage generator for responding to the one set of the gamma data to generate n gamma voltages (wherein n is an integer) having different voltage levels, and

- a column driver connected to the display panel, wherein the column driver receives the third video data and the n gamma voltages, and then corrects the third video data using the n gamma voltages and applies the corrected video data to the data lines.

37. (Previously Presented): The display device according to claim 36, further comprising:

- a row driver for sequentially applying a scanning pulse to the gate lines; and

- a timing controller for supplying timing control signals to the row and column drivers.

38. (Previously Presented): The display device according to claim 36, wherein a color temperature of the corrected video data maintains approximately 6500 K.

39. (Previously Presented): The display device according to claim 36, wherein the corrected video data maintains a brightness and a contrast equal to the first video data.